

WHAT IS CLAIMED IS:

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1. A liquid ejection recording head for effecting recording by ejecting first liquid and second liquid which is a different kind of liquid through different ejection outlets, while bi-directionally scanning a recording material in a scanning direction, comprising:
  - a group of first ejection outlet arrays each of which has a plurality of ejection outlets at predetermined intervals arranged in a direction different from the scanning direction, wherein corresponding ejection outlets in the respective ejection arrays are aligned in the scanning direction;
  - a group, disposed adjacent said group of said first ejection outlet arrays, of second ejection outlet arrays arranged in a manner similar to said first ejection outlet array group;
  - wherein said first ejection outlet arrays include a first ejection outlet array for ejecting the first liquid and a second ejection outlet array for ejecting the second liquid;
  - wherein said second ejection outlet arrays include a third ejection outlet array for ejecting the first liquid and a fourth ejection outlet array for ejecting the second liquid;
  - wherein said first ejection outlet array group and said second ejection outlet array group are

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cont.) outlet array group and said second ejection outlet  
array group are arranged such that kinds of the liquid  
are symmetrical with respect to said first and third  
ejection outlet arrays.

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6. An apparatus according to Claim 1, further  
comprising a fifth ejection outlet array, in addition  
to said first and second ejection outlet array, for  
ejecting liquid which is a kind of liquid different  
10 from the liquid ejected through said first and second  
ejection outlets.

7. An apparatus according to Claim 6, wherein  
the liquid ejected from said fifth ejection outlet  
15 array is black ink.

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A2.) 8. An apparatus according to Claim 1, wherein  
said first ejection outlet array group and said second  
ejection outlet array are provided in one orifice  
20 plate.

9. An apparatus according to Claim 1, further  
comprising a plurality of energy conversion element  
array groups for ejecting the liquid through said  
25 first ejection outlet array group and a plurality of  
energy conversion element array groups for ejecting  
the liquid from said second ejection outlet array

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A, Cont.) disposed such that first ejection outlet array and  
third ejection outlet array are adjacent to each other  
and that ejection outlets of said first ejection  
outlet array and the ejection outlets of said third  
5 ejection outlet array are disposed with deviation in a  
direction of arrangement of the ejection outlets so as  
to be complementary to each other in the scanning  
direction.

10 2. An apparatus according to Claim 1, further  
comprising a common liquid chamber for supplying the  
first liquid to said first ejection outlet array and  
said third ejection outlet array.

15 3. An apparatus according to Claim 1, wherein  
said first ejection outlet array group and said second  
ejection outlet array group are provided with ejection  
outlet arrays for ejecting third liquid which is  
different from the first liquid and from the second  
20 liquid.

4. An apparatus according to Claim 3, wherein  
the first liquid is yellow ink, the second ink and  
third ink are cyan ink and magenta ink.

25 5. An apparatus according to Claim 1, wherein  
the ejection outlet arrays of said first ejection

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group.

10. An apparatus according to Claim 9, wherein  
said substrate has a crystal face orientation of  
5 <100>.

11. An apparatus according to Claim 9, wherein  
said substrate has a crystal face orientation of  
10 <110>.

12. A liquid ejection head according to Claim 10  
or 11, wherein said substrate is provided with a  
plurality of through-holes for supplying the liquid to  
the ejection outlet arrays, and said through-holes are  
15 formed by anisotropic etching.

13. An apparatus according to Claim 8, wherein  
said orifice plate is made of photosensitive epoxy  
resin material.

14. An apparatus according to Claim 9, wherein  
said energy conversion element groups are groups of  
electrothermal transducers for generating thermal  
energy for ejecting the liquid through said ejection  
25 outlets.

15. A liquid ejection apparatus comprising a

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carriage for carrying said liquid ejection recording head as defined in Claim 1.

16. A liquid ejection recording head for effecting recording by ejecting first liquid and second liquid which is a different kind of liquid through different ejection outlets, while bi-directionally scanning a recording material in a scanning direction, comprising:

an orifice plate provided with a plurality of ejection outlet arrays each having a plurality of ejection outlets arranged at a predetermined intervals in a direction different from the scanning direction;

an element substrate having energy conversion elements, disposed corresponding to the ejection outlets of said orifice plate, for ejecting liquid, liquid supply paths for supplying the liquid to said ejection outlet arrays of said orifice plate, and a driving circuit for driving said energy conversion elements; and

wherein said ejection outlet arrays include a first ejection outlet array for ejecting second liquid, a second ejection outlet array for ejecting first liquid, a third ejection outlet array for ejecting the first liquid and a fourth ejection outlet array for ejecting the second liquid arranged in the order named in the scanning direction, and

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cont.

wherein a supply passage for supplying the first liquid supplies to said second ejection outlet array and said third ejection outlet array.

5 17. An apparatus according to Claim 16, wherein said energy conversion elements are electrothermal transducer elements for generating thermal energy for ejecting liquid from said ejection outlet.

10 18. A liquid ejection apparatus comprising a carriage for carrying said liquid ejection recording head as defined in Claim 16.

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